

3.2

AMBIENT BIOLOGICAL MONITORING

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Thirty-five stations were sampled during the 2001 sampling season to evaluate benthic macroinvertebrate communities for evidence of impairment due to toxic contamination. Biological monitoring in 2001 was concentrated in the Penobscot and North Coastal River Basins, in keeping with the Land and Water Bureau Five-Year Basin sampling rotation. The station list is essentially unchanged from that proposed in the 2001 SWAT workplan, except for minor substitutions. At this time, ten of the thirty-five stations sampled during the 2001 sampling season have been completely processed, evaluated, and reported. The remaining stations will be reported in an updated version of this report.

Table 3.2.1 summarizes the results of biological monitoring activities for the 2001 SWAT Program, which are sorted by waterbody name. Since waterbodies are sometimes sampled in more than one location, each sampling event was assigned a “Log” number and each sampling station was assigned a “Station Number”, which are listed in Table 3.2.1. Table 3.2.1 also includes a “Map” number for each sampling event. Using the “Map” number and the “Station Number”, locations of each sampling location can be found on Maps 1-15. Individual data reports for each sampling event (Aquatic Life Classification Attainment Reports) are presented following the summary table, temperature graphs, and maps. Use the “Log” number associated with a sampling event to identify the correct Aquatic Life Classification Attainment Report.

Supporting water chemistry data are given in Tables 3.2.2 (Nutrients and Solids) and 3.2.3 (Metals). Water temperature data are given in Figure 3.2.1.

Results Summary

- Thirty-five stations were assessed for the condition of the benthic macroinvertebrate community.
- Ten of the thirty-five stations have been processed, evaluated, and reported at this time.
- Six of the ten stations reported fail to attain the minimum aquatic life standards of their assigned class.
- Two of the ten stations exhibit natural aquatic communities (Class A).

Historical Notes

- Ohio Street Stream (Station 312) did not attain water quality standards in 1997. In 1999 and 2001, the same station met the minimum classification attainment of Class C but did not meet the Class B standards.
- Penjajawoc Stream (Station 313) did not attain water quality standards in 1997 and 2001.
- Pushaw Stream (Station 311) did not meet water quality standards in 1997. In 2001, there were insufficient data to make a determination because two samples were vandalized.

TABLE 3.2.1 - 2001 SWAT Benthic Macroinvertebrate Biomonitoring Results

Name	Map	Station	Log	Town	Location	Issue*	Statutory Class/ Model Class	Attains Class?	Probable Cause
Allen Stream	1	S308	1044	Exeter	below	Agricultural NPS	B/		
Babel Brook	2	S305	1001	T5R9 NWP		Reference	A/		
Bog Stream	3	S514	1040	T18MD BPP	below	Agricultural NPS	B/		
Burnham Brook	1	S506	1046	Garland	below	Agricultural NPS	B/		
Chandler River	4	S503	1038	Jonesboro	below	Reference	A/		
Crooked Brook	1	S509	1050	Garland	above	Reference	B/		
Crooked Brook	1	S510	1051	Corinth	below	Agricultural NPS	B/		
Crooked Stream	5	S500	1035	T30MD BPP		Agricultural NPS	AA/		
East Machias River	6	S494	1026	Crawford		Reference	AA/		
Footman Brook	1	S309	1045	Exeter	below	Agricultural NPS	B/		
French Stream	1	S505	1043	Exeter	below	Agricultural NPS	B/		
Great Falls Branch	7	S504	1042	Deblois	below	Agricultural NPS	A/		
Kenduskeag River	1	S508	1048	Corinth	below	Agricultural NPS	B/		
Kenduskeag River	1	S145	1049	Kenduskeag	below	Agricultural NPS	B/		
Machias River	5	S499	1033	T31MD BPP		Reference	AA/		
Machias River	5	S495	1027	Northfield	below	Agricultural NPS	AA/		
Mill Stream	8	S283	1013	Orrington	below	Agricultural NPS	B/		
Mopang Stream	9	S501	1034	T30MD BPP		Reference	AA/		
Narraguagus River	7	S111	1041	Deblois	above	Reference	AA/		
Narraguagus River	10	S81	1037	Cherryfield	below	Agricultural NPS	B/		
Ohio Street Stream	11	S312	1006	Bangor	below	Urban NPS	B/C	N	NPS Toxics; Habitat

* NPS = non-point source pollution

TABLE 3.2.1 - 2001 SWAT Benthic Macroinvertebrate Biomonitoring Results (cont.)

Name	Map	Station	Log	Town	Location	Issue*	Statutory Class/ Model Class	Attains Class?	Probable Cause
Penjawoc Stream	12	S511	1052	Bangor	above	Urban NPS	B/NA	N	NPS Toxics; Habitat
Penjawoc Stream	12	S512	1053	Bangor	below	Urban NPS	B/NA	N	NPS Toxics; Habitat
Penjawoc Stream	12	S314	1054	Bangor	below	Urban NPS	B/NA	N	NPS Toxics; Habitat
Penjawoc Stream	12	S513	1055	Bangor	below	Urban NPS	B/NA	N	NPS Toxics; Habitat
Penjawoc Stream	12	S315	1056	Bangor	below	Urban NPS	B/B	Y	
Piper Brook	1	S507	1047	Kenduskeag	below	NPS	B/		
Pleasant River	3	S293	1039	T18MD BPP	below	Agricultural NPS	AA/		
Pollard Brook	13	S485	1014	Edinburg		Reference	B/		
Pushaw Stream	11	S311	1005	Bangor	below	Urban NPS	B/		Insufficient Data
Reeds Brook	8	S481	1009	Hampden	below	NPS	B/A	Y	Exceeds Class
Shaw Brook	14	S480	1008	Bangor	below	Urban NPS	B/C	N	NPS Toxics; Habitat
Stinking Brook	2	S306	1002	T5R9 NWP		Reference	A/		
W. Branch Narraguagus River	10	S502	1036	Cherryfield	below	Agricultural NPS	AA/		
W. Branch Pleasant River	15	S286	1004	KIW	below	NPS; Metals	AA/A	Y	Best Professional Judgement

* NPS = non-point source pollution

Table 3.2.2 – Nutrients and Solids Data

Log	Waterbody	Collect Date	DOC	Si	NO ₃ -N	Total P	Total N	NH ₄	TSS
			mg/L	mg/L	mg/L N	µg/L	mg/L	mg/L	mg/L
1001	Babel Brook	19-Jul-01	6.5	3.0	0.010	10	0.271	0.03	0.5
1004	W. Br. Pleasant	19-Jul-01	3.1	3.0	0.001	9	0.236	0.03	4.9
1006	Ohio Stream	20-Jul-01	3.0	3.2	0.413	27	0.709	0.06	2.2
1008	Shaw Brook	20-Jul-01	6.1	1.4	0.069	16	0.450	0.05	1.0
1009	Reeds Brook	20-Jul-01	6.4	2.5	0.236	14	0.657	0.03	4.9
1026	East Machias R.	26-Jul-01	8.1	0.9	0.001	12	0.361	0.03	0.6
1027	Machias River	27-Jul-01	8.0	1.1	0.001	14	0.296	0.03	1.8
1033	Machias River	26-Jul-01	7.4	1.4	0.001	11	0.399	0.03	0.2
1037	Narraguagus R.	26-Jul-01	6.4	1.6	0.002	ND	0.306	0.03	0.8
1038	Chandler River	26-Jul-01	10.4	3.4	0.008	28	0.475	0.03	0.2
1041	Narraguagus R.	26-Jul-01	6.2	1.7	0.005	11	0.307	0.03	0.2
1043	French Stream	02-Aug-01	8.9	1.7	0.064	24	0.790	0.04	2.3
1044	Allen Stream	01-Aug-01	7.1	1.5	0.445	13	0.911	0.04	1.3
1045	Footman Brook	01-Aug-01	12.4	2.9	0.096	15	0.815	0.04	12.0
1046	Burnham Brook	01-Aug-01	2.2	3.6	0.360	21	0.829	0.04	6.0
1052	Penjajawoc Stream	03-Aug-01	2.1	7.4	0.957	26	1.267	0.03	2.5
1053	Penjajawoc Stream	03-Aug-01	4.9	1.8	0.206	37	0.662	0.05	22.0
1054	Penjajawoc Stream	03-Aug-01	4.4	1.6	0.007	19	0.359	0.02	7.8
1055	Penjajawoc Stream	03-Aug-01	4.4	1.7	0.037	18	0.456	0.04	2.9
1056	Penjajawoc Stream	03-Aug-01	3.5	2.6	0.046	11	0.473	0.04	4.2

DOC = dissolved organic carbon, Si = silicon, NO₃-N = nitrate, Total N = total nitrogen,
Total P = total phosphorus, NH₄ = ammonia, and TSS = total suspended solids; ND = no data.

TABLE 3.2.3 – Metal Data

Log	Waterbody	Cd mg/L digest	Cr mg/L digest	Fe mg/L digest	Pb mg/L digest	Zn mg/L digest
1001	Babel Brook	<0.05	0.69	130	<0.50	26.22
1004	W. Br. Pleasant R.	<0.05	1.33	519	<0.50	4.54
1006	Ohio Street Stream	<0.05	0.78	510	<0.50	4.10
1008	Shaw Brook	<0.05	0.61	473	<0.50	8.27
1009	Reeds Brook	<0.05	0.60	460	<0.50	8.89
1026	East Machias R.	<0.05	1.39	184	<0.50	2.50
1027	Machias River	<0.05	<0.50	333	<0.50	<1.00
1033	Machias River	<0.05	1.99	233	<0.50	5.39
1037	Narraguagus R.	0.37	0.69	368	<0.50	2.57
1038	Chandler River	<0.05	1.05	1267	<0.50	3.91
1041	Narraguagus R.	<0.05	<0.50	183	<0.50	2.82
1043	French Stream	<0.05	<0.50	664	<0.50	2.39
1044	Allen Stream	<0.05	<0.50	229	<0.50	<1.00
1045	Footman Brook	0.15	<0.50	416	<0.50	1.07
1046	Burnham Brook	<0.05	<0.50	948	<0.50	3.27
1052	Penjajawoc Stream	<0.05	<0.50	233	<0.50	<1.00
1053	Penjajawoc Stream	<0.05	0.74	1422	<0.50	7.88
1054	Penjajawoc Stream	<0.05	<0.50	722	<0.50	5.74
1055	Penjajawoc Stream	<0.05	<0.50	443	<0.50	3.02
1056	Penjajawoc Stream	<0.05	<0.50	180	<0.50	1.32

Cd = cadmium, Cr = chromium, Fe = iron, Pb = lead, and Zn = zinc.

Figure 3.2.1 – In-Stream Temperature Data

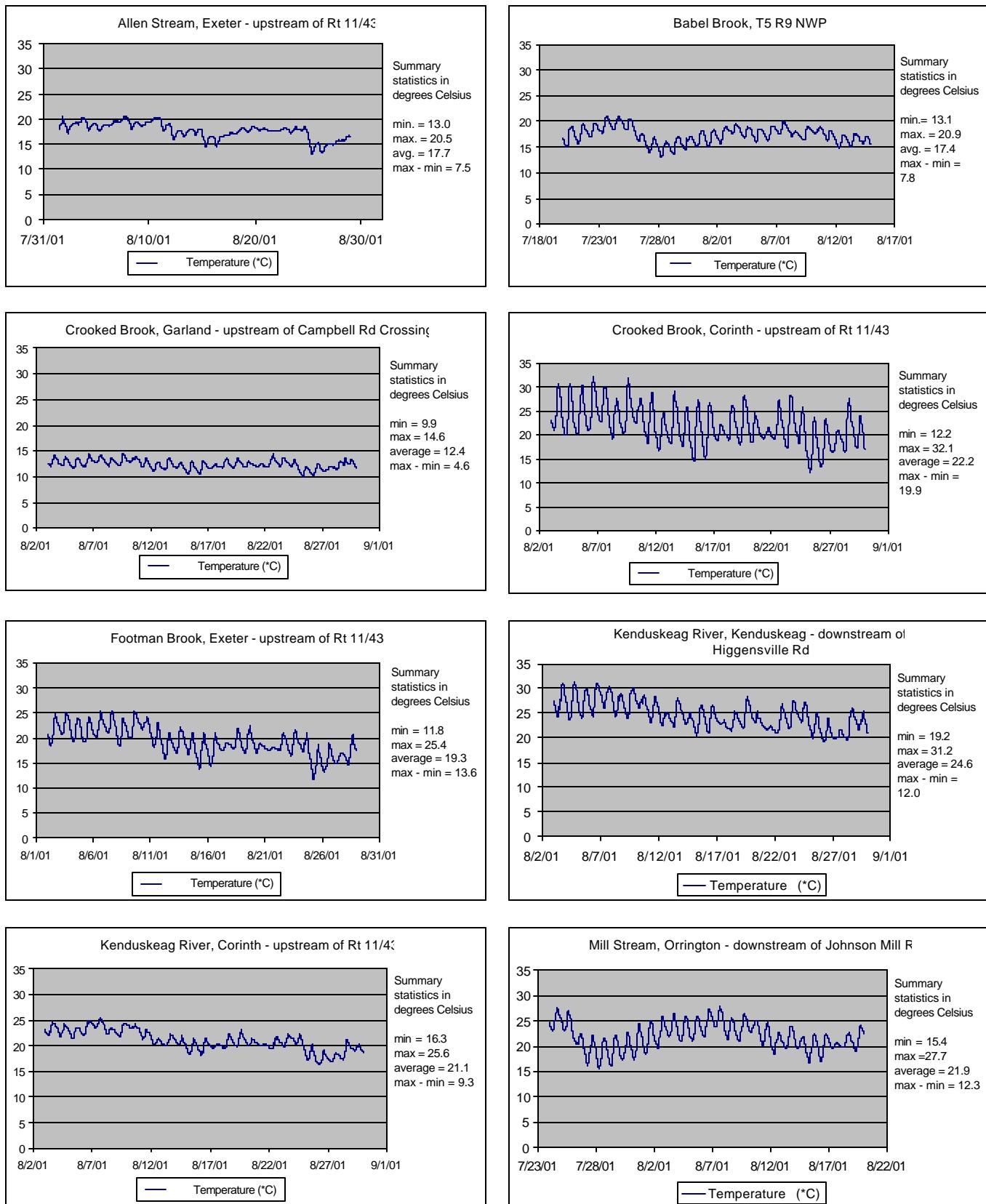


Figure 3.2.1 – In-Stream Temperature Data (Continued)

